

AMENDMENTS TO THE SPECIFICATION WITH MARKINGS TO SHOW CHANGES MADE

Replace paragraph beginning page 9, line 4 to 10 as follows:

--In FIG. 2, only the mandrel 14 is slightly moved downwards (see arrow). The nozzle gap 20 is demarcated at the outside by the lower inner circumferentially smooth edge 24 of the nozzle slide DS II, and at the inside by the mandrel 14. The discharged tube 22 is evenly thin about its circumference. In the partial section of the tube 22, as illustrated therebelow in FIG. 2a, a small arrow indicates the potential thickness of the tube when the mandrel travels to the lowermost position and the nozzle gap is fully open.--;

Replace paragraph beginning page 9, line 12 to page 10, line 7 as follows:

--In FIG. 3, the adjustment element DS I together with the adjustment element DS II is slightly moved upwards (see arrow), so that these two adjustment elements are not in operative engagement at that point with the exiting tubular parison 22. The nozzle gap 20 is now demarcated by the mandrel 14 and the profiled housing-fixed ring part DF. The tube exiting the nozzle gap is no longer uniformly thick in circumferential direction, but is slightly thinner in two opposing regions than the respective tube regions respectively arranged offset by 90° thereto (FIG. 3a). Such a double-oval adjustment of the nozzle gap or oval wall thickness adjustment in areas of the tube is typical for blow molded parts with flat top plate and bottom plate, whereby, the two

opposing tube sections 26 with greater wall thickness are so guided between the open blow mold halves that the horizontal container wall areas, which are offset by 90° to the mold partition plane, are blow-molded therefrom with the greatest stretching degrees and blow paths of the plastic material. This feature thus serves as a measure to attain a uniform wall thickness in the finished container, so that the container wall is not thinner in the corner areas with high degrees of stretching or orientation in comparison to the remaining vertical wall parts. FIG. 3 illustrates a sectional view through the thinner tube area (and extrusion head) which bears in the blow mold in the mold partition plane upon the blow mold wall.--;

Replace paragraph beginning page 9, lines 9 to 14 as follows:

--FIG. 4 shows the same position of the nozzle/mandrel gap adjustment elements compared to FIG. 3, but at a 90° rotated section through the extrusion head and thus through a thicker wall zone 26 of the tube 22, as clearly illustrated by the partial sectional view through tube 22 therebelow as seen in FIG. 4a. To the left, next to the profiled ring part DF, there is indicated a developed view of the known wavy profile of the inner nozzle surface of the ring part DF.--;

Replace paragraph beginning page 10, line 16 to page 11, line 11 as follows:

--In FIG. 5 and FIG. 6, the profiled nozzle slide DS I is moved downwards and acts on the exiting plastic tube, while the nozzle slide DS II still remains in its previous upper position outside a zone of influence. The profile of DS I includes a

circumferential tooth profile, as clearly shown therebelow in FIG. 5a by the partial sectional illustrations of the exiting tube 22. The teeth 30 of the profile form a thinner tube wall thickness, and a greater tube wall thickness with outwardly projecting ribs is formed in the tooth gaps 32. FIG. 5 shows the section through the extrusion head and the tube 22 in the area of a thinner tube wall (tooth action 30), and FIG. 6 shows a slightly offset section in the area of a thicker tube wall (tooth gap action 32), with pronounced formation of longitudinal ribs 28 (FIG. 6a). The profile in the fixed nozzle ring part DF, as well as in the nozzle slide DS may be expanded slantingly outwardly or simply parallel to the surface of the mandrel 14. FIG. 6 indicates by way of the small arrow below the nozzle guide DS II, the depth by which the teeth 30 of the tooth profile of the nozzle slide DS I are able to act on the tube 22 from outside. To the left of the nozzle slide DS I is a schematic illustration, in developed view, of the tooth profile of the DS I with teeth 30 and tooth gaps 32. In this embodiment, the lowermost non-profiled nozzle slide DS II, serves actually only as a smoothening element or to cover the profiles of the ring part DF or/and to cover the nozzle slide DS I.--;

Replace paragraph beginning page 11, line 13 to page 12, line 4 as follows:

--FIG. 7, FIG. 8 and FIG. 9 illustrate a modified embodiment of an extrusion head according to the invention, with the special profile (= tooth profile) formed on the nozzle slide DS II instead of on the nozzle slide DS I, while the nozzle slide DS I has a smooth circumferential surface in direction of the nozzle gap. In FIG. 7, both nozzle slides DS I and DS II are moved into their uppermost

position (outside of zone of influence), and only the oval-profile of the housing-fixed ring part DF and the adjustable mandrel 14 act on the tube 22 in the nozzle gap 20. The small partial sectional views 7a and 7b on the side indicate on the left (7a) a thinner tube wall thickness (in mold partition plane FT) and on the right (7b) a thicker tube wall thickness (90° with respect to the mold partition plane FT). In FIG. 8, both nozzle slides DS I and DS II are moved downwards. The DS I has a lower smooth circumference and covers the oval-profile of the fixed ring part DF, thereby rendering it ineffective. The tooth profile of the lower nozzle slide DS II acts in the nozzle gap 20 on the exiting tube 22 and produces the profiled tube formation with the longitudinal ribs 28, as illustrated in the small partial sectional illustration in FIG. 8a--;

Replace paragraph beginning page 12, line 6 to page 13, line 6 as follows:

--FIG. 9 shows a positioning of the adjustment elements in which no profile is effective, but rather only a circumferentially even change of the wall thickness can be carried out by an axial displacement of the mandrel 14. In accordance with the wall thickness diagrams FIGS. 9a, b, and c, which illustrate for each adjustment element a separate control program, as shown in the lower left hand side of FIG. 9, the control of adjustment elements D 0, DS I and DS II for adjusting a desired wall thickness over the length L of the exiting tube is effected at the blow form machine. Diagram 9a shows - as does the partial sectional view FIG. 9f to the right of the ejected tube 22- an even increase of the wall thickness from bottom to top, by opening the nozzle gap 20 through axial

displacement of mandrel 14 in downward direction. The added wall thickness for the top plate and bottom plate of the drum, as shown in diagram 9b, is realized by the oval profile in the fixed nozzle ring part DF which is cleared when the non-profiled and smooth nozzle slide DS I travels upward. At that point, the tooth profile nozzle slide DS I is hereby not effective. For adjustment of the tooth profile in the tube - e.g. for longitudinal ribs in the vertical wall region of the bung drum as shown to the right thereof in FIG. 9d and e- the nozzle slide DS II is moved downwards for active engagement, whereby also the nozzle slide DS I moves downwards, thereby covering again the profile of the fixed ring part DF. In order to maintain an even thickness of the tube, the mandrel 14 is also moved simultaneously slightly downwards, and the nozzle gap opened as needed. For clarification, it should be noted that the nozzle slide with the novel tooth profile of the nozzle slide realizes in general only a redistribution of the plastic material in the nozzle gap, whereby the free cross sectional area of the nozzle gap may remain constant.--;

Replace paragraph beginning page 14, line 15 to page 15, line 3 as follows:

--A further embodiment is shown in FIG. 11, illustrating a modification of the extrusion head shown in FIG. 6, with a ring sleeve as nozzle slide DS III being secured inside the nozzle head DS II for adjustment in circumferential direction. This ring sleeve = DS III has at its bottom side a same tooth profile as the nozzle slide DS I disposed on the inside; see FIG. 11a. Additionally, the nozzle slide DS II is slightly slanted inwardly at the bottom. When downwardly

moving the nozzle slide II together with ring sleeve DS III so as to be flush with the nozzle slide I, a rotation of the ring sleeve enables a covering or opening of the teeth of the nozzle slide DS I from the side. In this way, the formation of the rib width on the exiting tube 22 can be continuously modified or randomly adjusted. A simultaneous up and down movement of the nozzle slide DS II together with the ring sleeve DS II also allows the height of the ribs 28 (FIG. 11b) to be continuously modified and adjusted. --;

Replace paragraph beginning page 16, lines 10 to 14 as follows:

--FIG. 16 illustrates a 220 liter lidded drum 36 having longitudinal ribs which are formed in the vertical wall zones and evenly spaced from one another but which do not extend into the bottom region, as shown in the sketched partial sectional illustration below in FIG. 16a with constant drum wall thickness.--;

Replace paragraph beginning page 17, line 13 to 15 as follows:

--FIG. 17 shows a fassett 38 in which only the vertical wall zones are reinforced by longitudinal ribs. This longitudinal ribbing is clearly illustrated in the partial sectional illustration in FIG. 17a through the container wall.--;

Replace paragraph beginning page 17, line 17 to 21 as follows:

--FIG. 18 shows a canister 40 formed only in the corner regions with two longitudinal ribs which extend, however, to the top plate and bottom plate, as indicated in the partial sectional view below in FIG. 18a. A longitudinal and cross-

sectional view of a tubular parison 22 with special profile for a plastic fuel tank KKB 42 is shown in FIG. 19, with FIG. 20 showing flash pieces still attached thereto.--;

Replace paragraph beginning page 18, line 1 to 4 as follows:

--The extrusion head according to the invention with three separate adjustment systems is particularly suitable to fabricate and produce such special profiles with partial material accumulation (cf. section A-A, B-B and C-C in FIG. 19a, b, c) as required for KKB 42 in the area of a stub opening (cf. section D-D in FIG. 20 as shown in FIG. 20a).--.

**AMENDMENTS TO THE CLAIMS WITH MARKINGS TO SHOW CHANGES
MADE, AND LISTING OF ALL CLAIMS WITH PROPER IDENTIFIERS**

21. (Rewritten in independent form) An extrusion head for producing a tubular parison for the manufacture of blow-molded plastic hollow bodies, comprising:
- an adjustable ring-shaped tube outlet nozzle including at least three separate, exchangeable adjustment elements of different profile for defining a nozzle gap to vary a wall thickness of an exiting tube, wherein the adjustment elements are moveable to act independently or commonly on the tube; and
- at least two adjustment drives for cooperation with at least a first one and a second one of the adjustment elements, whereby the adjustment drives and the adjustment elements are placed into one-to-one correspondence, wherein one of the three adjustment elements is a mandrel which has a lowermost outer edge, wherein the other two of the adjustment elements are disposed to define an upper adjustment element and a lower adjustment element, with the lower adjustment element having a lowermost inner edge which is intended for engagement with the exiting tube and is disposed in level with or slightly above a lowermost outer edge of the mandrel, and a further moveable adjustment element located between the upper and lower adjustment elements and supported for rotation in circumferential direction.

Claim 13 is cancelled;

14. (Currently amended) The extrusion head of claim ~~13~~ 21, wherein a third one of the adjustment elements is disposed below the second adjustment element and configured for realizing a special profile, wherein the third adjustment element acts last on the tube to influence the wall thickness of the tube.

15. (Previously new) The extrusion head of claim 14, wherein the special profile is a tooth profile.

Claim 16 is cancelled;

17. (Currently amended) The extrusion head of claim ~~13~~ 21, and further comprising a drive assembly operatively connected to the third adjustment element for shifting the third adjustment element in axial direction.

18. (Currently amended) The extrusion head of claim ~~13~~ 21, wherein the adjustment elements are configured for quick attachment to permitting easy exchange.

19. (Previously new) The extrusion head of claim 17, wherein the third adjustment element is of split configuration and comprised of two 180° half-ring segments, wherein the drive assembly includes two adjustment drives

for moving the half-ring segments in a radial direction, whereby the adjustment drives and the half-ring segments are placed into one-to-one correspondence.

Claims 20 and 21 are cancelled;

22. (Currently amended) The extrusion head of claim ~~46~~ 21, wherein the further adjustment element has a same profile as the upper adjustment element.
23. (Previously new) The extrusion head of claim 22, wherein the profile is a toothed profile.
24. (Currently amended) The extrusion head of claim ~~46~~ 21, and further comprising a holder supporting a third one of the adjustment elements for movement in an axial direction, wherein the third adjustment element is formed with a special profile.
25. (Previously new) The extrusion head of claim 24, wherein the special profile is a toothed profile.
26. (Previously new) The extrusion head of claim 24, wherein one of the adjustment elements is configured with a smooth circumferential surface, another one of the adjustment elements has an oval profile, and another one of the adjustment elements has a special profile.

27. (Previously new) The extrusion head of claim 26, wherein the special profile is a tooth profile.
28. (Currently amended) The extrusion head of claim ~~43~~ 21, for making a 220 liter drum with an outer diameter of about 585 mm and a drum weight of about 9.5 kg, wherein one of the adjustment elements has a rectangular tooth profile and a diameter of about 190 mm, wherein the one of the adjustment elements has inner and outer ring edges interacting with the exiting tube and having alternately about 60 grooves of half-round configuration, as viewed in cross section, and a complementary number of rectangular teeth, with a width of the grooves being narrower than a width of the teeth .
30. (Previously new) The extrusion head of claim 28, wherein the width of the teeth is about 5mm, the width of the grooves is about 4 mm, and wherein the grooves have a radial depth of about 10 mm.
30. (Currently amended) The extrusion head of claim ~~43~~ 21, wherein the tube shaped outlet nozzle is bounded at one side by a central mandrel and one gap adjustment element and on a corresponding opposing side by two adjustment elements; and wherein each gap adjustment element can be moved one of, separately or simultaneously, into active engagement with

the exiting parison in the nozzle gap from the one side and from the opposing side to thereby vary the wall thickness of the exiting parison.

REMARKS

The last Office Action of July 2, 2003 has been carefully considered. Reconsideration of the instant application in view of the foregoing amendments and the following remarks is respectfully requested.

Claims 13-30 are pending in the application. Claims 14, 17, 18, 22, 24, 28, 30 have been amended. Claims 13, 16 and 20 have been canceled. No claims have been added. A total of 14 claims is now on file. No claim surcharge is due.

It is noted that the drawings are objected to because of applicant's failure to show reference numeral 26. A drawing proposal showing the required change is submitted herewith.

Claims 13, 14, 16-18, 20, 22 and 24 stand rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Pat. No. 4,422,839 (hereinafter "Przytulla").

Claims 13 and 30 stand rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Pat. No. 5, 057,267 (hereinafter "Seizert").

Claims 15, 23 and 25-29 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Przytulla.

Claim 19 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Seizert.

It is noted with appreciation that claim 21 is indicated allowable if rewritten in independent form to overcome the rejection under 35 U.S.C. §112 and to include all of the limitations of the base claim and any intervening claims.

Applicants have presented herewith the above amendment in which claim 21 has been rewritten in independent form including the base claim and any intervening claims. It is submitted that all the claims as presented are now allowable.

OBJECTION TO THE DRAWING

Applicant submits herewith amended Fig. 4 to show the reference numeral 26. The specification has been amended to make it consistent with the amendment to the drawing.

Furthermore, applicants have amended the specification to include references to Figs. 2a, 3a, 4a, 5a, 6a, 7a, 7b, 8a, 9a, 9b, 9c, 9d, 9e, 11a, 11b, 16a, 18a, 19a, 19b, 19c, and 20a. No new matter has been added.

CLARIFICATION AMENDMENT

The instant specification has been amended to indicate the references to the Figure numbers as set forth above.

Claim 21 has been rewritten in the manner as suggested by the Examiner. In view of the amended claims and the amendments to the specification and the drawing, applicants submit that the application is now in condition for allowance.

CITED REFERENCES

Applicant has also carefully scrutinized the further cited prior art and finds it without any relevance to the newly submitted claims in view of the amendments.

CONCLUSION

Applicant believes that in light of the above amendments, it is respectfully submitted that all claims on file should be considered patentably differentiated over the art and should be allowed.

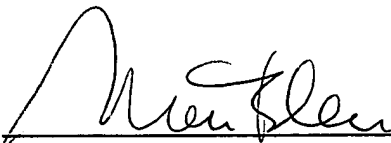
A certified copy of the priority document under 35 U.S.C. §119(a)-(d), is enclosed herewith.

Reconsideration and allowance of the present application are respectfully requested.

Should the Examiner consider necessary or desirable any formal changes anywhere in the specification, claims and/or drawing, then it is respectfully requested that such changes be made by Examiner's Amendment, if the Examiner feels this would facilitate passage of the case to issuance. If the Examiner feels that it might be helpful in advancing this case by calling the undersigned, applicant would greatly appreciate such a telephone interview.

The Commissioner is hereby authorized to charge fees which may be required, or credit any overpayment to Deposit Account No. 06-0502.

Respectfully submitted,

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